REMARKS

This paper is being provided in response to the Office Action dated August 28, 2006, for the above-referenced application. In this response, Applicants have amended claims 63, 71, 80, 81, 86, 94 and 103 in order to clarify that which Applicants consider to be the invention. Applicants respectfully submit that the amendments to the claims are all supported by the originally filed application.

The rejection of claims 63-81 and 86-103 under 35 U.S.C. 103(a) as being anticipated by U.S. Patent No. 6,058,389 to Chandra et al. (hereinafter "Chandra") in view of U.S. Patent No. 5,163,054 to Nagy (hereinafter "Nagy") and further in view of U.S. Patent No. 6,104,757 to Rhee (hereinafter "Rhee") is hereby traversed and reconsideration thereof is respectfully requested in view of the amendments to the claims contained herein.

Independent claim 63, as amended herein, recites a method of sending data that includes obtaining a first predetermined value for a sequence number, obtaining blocks of data, where each of the blocks of data corresponds to a packet of data, assigning the first predetermined value as the sequence number to each of the packets of data where at least two packets of data are assigned the same sequence number before the at least two packets are sent to a destination, and, in response to the sequence number becoming equal to a second predetermined value different from the first predetermined value, acknowledging receipt of the blocks of data corresponding to the packets of data that are assigned the first predetermined value as the sequence number and sending the packets of data that are assigned the first predetermined value as the sequence number to the destination, where packets of data associated with the same sequence number are

sent to the destination in an order that is independent of an order in which the packets are obtained. Claims 64-70 depend, directly or indirectly, from claim 63.

Independent claim 71, as amended herein, recites a method of receiving data, that includes accumulating received packets of data having a sequence number equal to a first predetermined value where at least two packets of data have the same sequence number, the sequence number being assigned before the at least two packets of data are transferred to a receiving device. A first indication is obtained that the sequence number equals the first predetermined value, obtaining a second indication that the sequence number equals a second predetermined value different from the first predetermined value, and, in response to obtaining the second indication, transferring data corresponding to packets of data having the sequence number equal to the first predetermined value to the receiving device, where packets of data associated with the same sequence number are transferred to the receiving device in an order that is independent of an order in which the packets are accumulated. Claims 72-79 depend, directly or indirectly, from claim 71.

Independent claim 80, as amended herein, a method of transferring data that includes obtaining a first predetermined value for a first sequence number, obtaining blocks of data, where each of the blocks of data corresponds to a packet of data, assigning the first predetermined value as the first sequence number to each of the packets of data where at least two packets of data are assigned the same sequence number before the at least two packets of data are sent to a destination. In response to the first sequence number becoming equal to a second predetermined value different from the first predetermined value, acknowledging receipt

of the blocks of data corresponding to the packets of data that are assigned the first predetermined value as the sequence number and sending the packets of data that are assigned the first predetermined value as the sequence number to the destination, where packets of data associated with the same sequence number are sent to the destination in an order that is independent of an order in which the packets are obtained, accumulating received packets of data having a sequence number equal to the first predetermined value, obtaining a first indication that the sequence number equals the first predetermined value, obtaining a second indication that the sequence number equals a second predetermined value different from the first predetermined value, and, in response to obtaining the second indication, transferring data corresponding to packets of data having the sequence number equal to the first predetermined value to a receiving device, where packets of data associated with the same sequence number are transferred to the receiving device in an order that is independent of an order in which the packets are accumulated.

Independent claim 81, as amended herein, recites a computer system that includes a host performing a data operation for transferring blocks of data from a first device to a second device, a first WAN blade connected to the first device, a second WAN blade connected to the first WAN blade by a network, the second device being connected to the second WAN blade, where the first WAN blade includes machine executable code that receives the blocks of data from the first storage device, each of the blocks corresponding to a packet of data, assigns a first predetermined value to each of the packets of data where at least two packets of data are assigned the same sequence number, and, in response to receiving a second predetermined value different than the first predetermined value, acknowledges receipt of the blocks of data

associated with the first predetermined value and sending the packets of data that are assigned the first predetermined value as a sequence number to the second device, where packets of data associated with the same sequence number are sent to the destination in an order that is independent of an order in which the packets are received and the second WAN blade includes machine executable code that receives the packets of data associated with the first predetermined value, obtains an indication of the first predetermined value as a sequence number, obtains a second indication that the sequence number equals a second predetermined value different from the first predetermined value, and in response to obtaining the second indication, transfers data corresponding to packets of data having the sequence number equal to the first predetermined value to the second device, where packets of data associated with the same sequence number are transferred to the second device in an order that is independent of an order in which the packets are received.

Independent claim 86, as amended herein, recites a computer program product, implemented in a computer-readable medium, for sending data. The computer program product is recited as including machine executable code that obtains a first predetermined value for a sequence number, machine executable code that obtains blocks of data, where each of the blocks of data corresponds to a packet of data, machine executable code that assigns the first predetermined value as the sequence number to each of the packets of data where at least two packets of data are assigned the same sequence number, and machine executable code that, in response to the sequence number becoming equal to a second predetermined value different from the first predetermined value, acknowledges receipt of the blocks of data corresponding to the packets of data that are assigned the first predetermined value as the sequence number and

sending the packets of data that are assigned the first predetermined value as the sequence number to a destination, where packets of data associated with the same sequence number are sent to the destination in an order that is independent of an order in which the packets are obtained. Claims 87-93 depend, directly or indirectly, from claim 86.

Independent claim 94, as amended herein, recites a computer program product, implemented in a computer-readable medium, for receiving data. The computer program product is recited as including machine executable code that accumulates received packets of data having a sequence number equal to a first predetermined value where at least two packets of data have the same sequence number, the sequence number being assigned before the at least two packets of data are transferred to a receiving device. Machine executable code obtains a first indication that the sequence number equals the first predetermined value, machine executable code that obtains a second indication that the sequence number equals a second predetermined value different from the first predetermined value, and machine executable code that, in response to obtaining the second indication, transfers data corresponding to packets of data having the sequence number equal to the first predetermined value to the receiving device, where packets of data associated with the same sequence number are transferred to the receiving device in an order that is independent of an order in which the packets are accumulated. Claims 95-102 depend, directly or indirectly, from claim 94.

Independent claim 103, as amended herein, recites a computer program product, implemented in a computer-readable medium, for transferring data. The computer program product is recited as including machine executable code that obtains a first predetermined value

for a first sequence number, machine executable code that obtains blocks of data, where each of the blocks of data corresponds to a packet of data, machine executable code that assigns the first predetermined value as the first sequence number to each of the packets of data where at least two packets of data are assigned the same sequence number before the at least two packets of data are sent to a destination. Machine executable code, in response to the first sequence number becoming equal to a second predetermined value different from the first predetermined value, acknowledges receipt of the blocks of data corresponding to the packets of data that are assigned the first predetermined value as the sequence number and sending the packets of data that are assigned the first predetermined value as the sequence number to the destination, where packets of data associated with the same sequence number are sent to the destination in an order that is independent of an order in which the packets are obtained, machine executable code that accumulates received packets of data having a sequence number equal to the first predetermined value, machine executable code that obtains a first indication that the sequence number equals the first predetermined value, machine executable code that obtains a second indication that the sequence number equals a second predetermined value different from the first predetermined value, and machine executable code that, in response to obtaining the second indication, transfers data corresponding to packets of data having the sequence number equal to the first predetermined value to a receiving device, where packets of data associated with the same sequence number are transferred to the receiving device in an order that is independent of an order in which the packets are accumulated.

The Chandra reference discloses a message queuing system integrated into a database system. Transactions can create messages using an enqueue operation and consume messages by

using a dequeue operation. Messages are selected for consumption based upon the control information stored with the message (See col. 6, lines 59-63 of Chandra), which includes the sequence numbers of the messages. Chandra discloses that messages may be dequeued according to one of the following options 1-4: (1) First in first out (fifo), disclosed as being the default, see col. 10, beginning at line 55; (2) priority code specified by user, see col. 10, beginning at line 55; (3) according to a queue sort table, see col. 8, lines 41-46; and (4) according to priority, where messages with the same priority are dequeued in the order that the messages were enqueued (i.e., first in first out), see col. 24 beginning at line 55. The Office Action states that Chandra does not teach assigning the first predetermined value as the sequence number to each of the packets of data, wherein at least two packets of data are assigned the same sequence number.

The Nagy reference discloses a method for data transmission using a modified high level data link control protocol. The Office Action cites Nagy as disclosing the assignment of the same sequence number to a frame, wherein before confirmation for altering the transmit toggle bit is issued each time the same sequence number is reused and a data frame must be confirmed before reusing a transmit sequence number. (See col. 6, lines 41-68 of Nagy.)

The Rhee reference discloses a system and method of error control for interactive low-bit rate video transmission. The Office Action cites Rhee as disclosing that retransmitted packets are assigned the same sequence numbers as their original packets and acknowledgements corresponding to the received packets are returned from the receiver and after receiving acknowledgment the retransmitted packets are sent to the destination in an order independent of

the order in which it was received. (See col. 3, lines 8-23 and col. 15, lines 8-28 of Rhee.)

The present claimed invention provides a mechanism whereby a plurality of data packets may be assigned the same sequence number before being sent or transferred so that the order of packets having the same sequence number does not matter. The present claimed invention creates an order dependency by assigning packets different sequence numbers so that, for example, if packets A, B, and C were all assigned different sequence numbers, then those packets would be order dependent according to the sequence numbers. However, packets for which the order does not matter may all be assigned the same sequence number and thus, if packets A, A', and A'' were assigned the same sequence number, those packets may be handled in any order. Thus, as recited in the claims as presently amended, packets with same sequence number are assigned that sequence number before being sent or transferred and, subsequently, the all packets having the same sequence number may be sent or transferred in an order that is independent of the order that packets are obtained or accumulated.

Applicants respectfully submit that neither Chandra, Nagy nor Rhee, taken alone or in combination, teach or fairly suggest a feature of the present claimed invention, recited in each of the independent claims in various forms, wherein at least two packets of data are assigned the same sequence number before the at least two data packets are sent, and the packets of data are sent to the destination in an order that is independent of an order in which the packets are obtained. As noted in the Office Action, Chandra does not disclose assigning the same sequence number to at least two data packets. Moreover, Nagy teaches *reuse* of a sequence number *after* receiving confirmation that data having the sequence number has been received, specifically

stating: "Once a sequence number has been assigned, it can only be made available again if the receiver has confirmed reception of that sequence number..." (col. 6, lines 57-59 of Nagy). Furthermore, Rhee discloses *retransmitting* a data packet having the same sequence number as an original packet after acknowledgment is sent concerning missing/lost packets (see col. 15, lines 12-20 of Rhee). Accordingly, neither Chandra, Nagy nor Rhee disclose assigning the same sequence number to at least two packets of data *before the packets of data are sent to a destination*, as is claimed by Applicants.

For the reasons set forth above, Applicants respectfully request that this rejection be withdrawn.

The rejection of claims 82-85 under 35 U.S.C. 103(a) as being unpatentable over Chandra in view of Nagy and Rhee and further in view of U.S. Patent No. 6,014,710 to Talluri, et al. (hereinafter "Talluri") is hereby traversed and reconsideration thereof is respectfully requested.

The features of independent claim 81 are discussed above in reference to Chandra, Nagy and Rhee. Claims 82-85 depend therefrom.

Talluri discloses a system and method for message transmission between network nodes using remote wires. The Office Action cites Talluri as disclosing storage nodes of a network with virtual and physical addresses for mapping data among the storage devices.

Applicant respectfully submits that the deficiencies of Chandra with respect to claim 81, discussed above, are not overcome by the addition of the Talluri reference. Accordingly, Applicants respectfully request that this rejection be withdrawn.

Based on the above, Applicant respectfully requests that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 508-898-8603.

Respectfully submitted,
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